

# **PULSE CROP ECONOMICS**

## **COMPARISON TO OTHER CROPS & ROTATION ECONOMICS**

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# Why is the developing pulse crop industry important to the Montana Department of Agriculture?

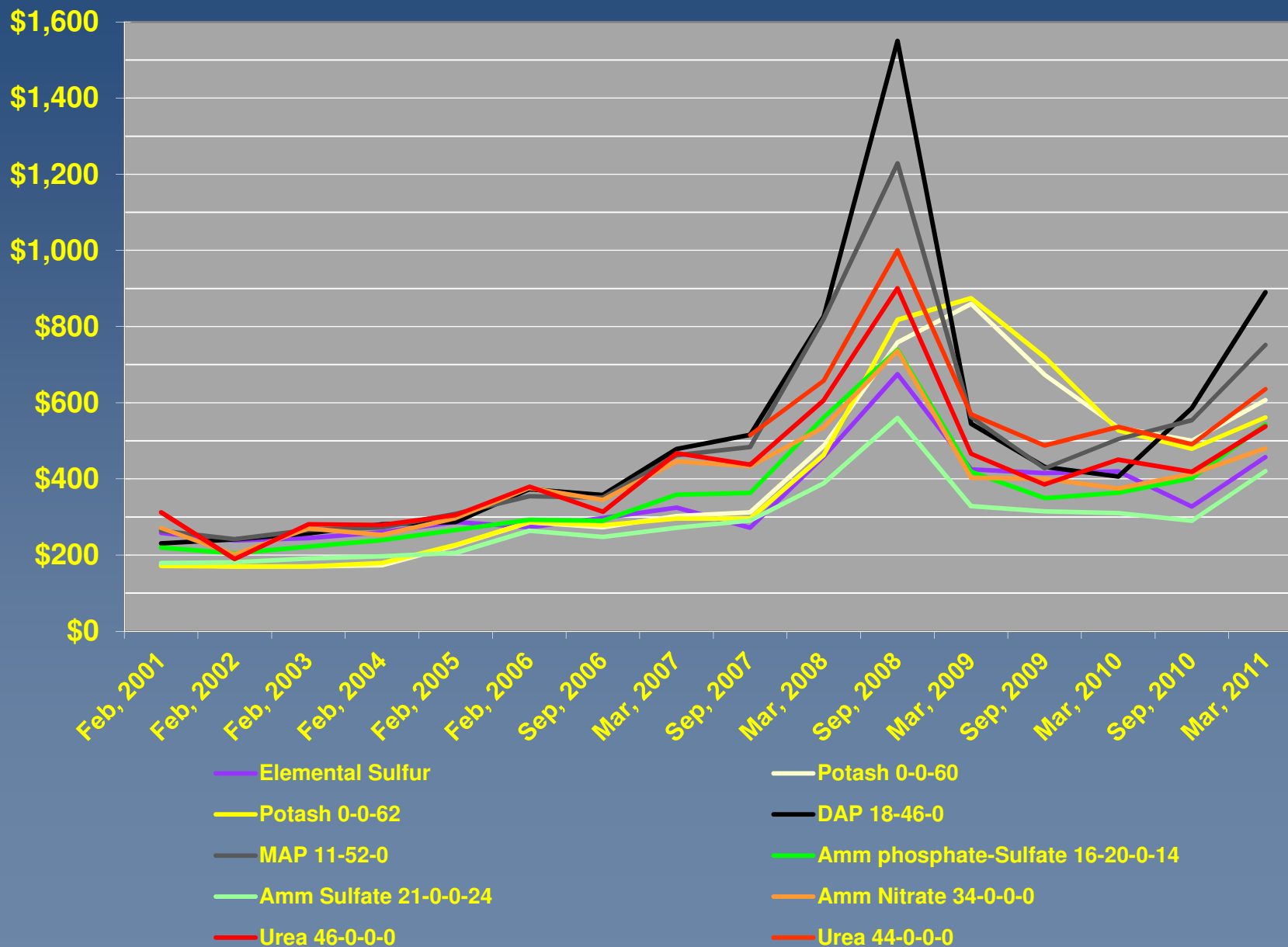
## Why is this important to you?

**Pulse crops appear to be a good opportunity for Montana's farmers:**

- Competitive Economics
- Rotational Benefits
  - Boost in yield & quality of following cereal crops
  - Help break disease cycles
  - Help deal with insect problems (sawfly)
  - Change carbon-nitrogen ratio (improve soil health)
  - Weed Control
- Reduced fertilizer inputs
- Possibility of more intensive rotations
- Diversification: of production & marketing risks, buyers, markets
- Flexibility: grain, forage, cover crop

# The role of fertilizer in the year-to-year comparisons:

State Average Fertilizer Price 2001 - 2011 (\$/ton)

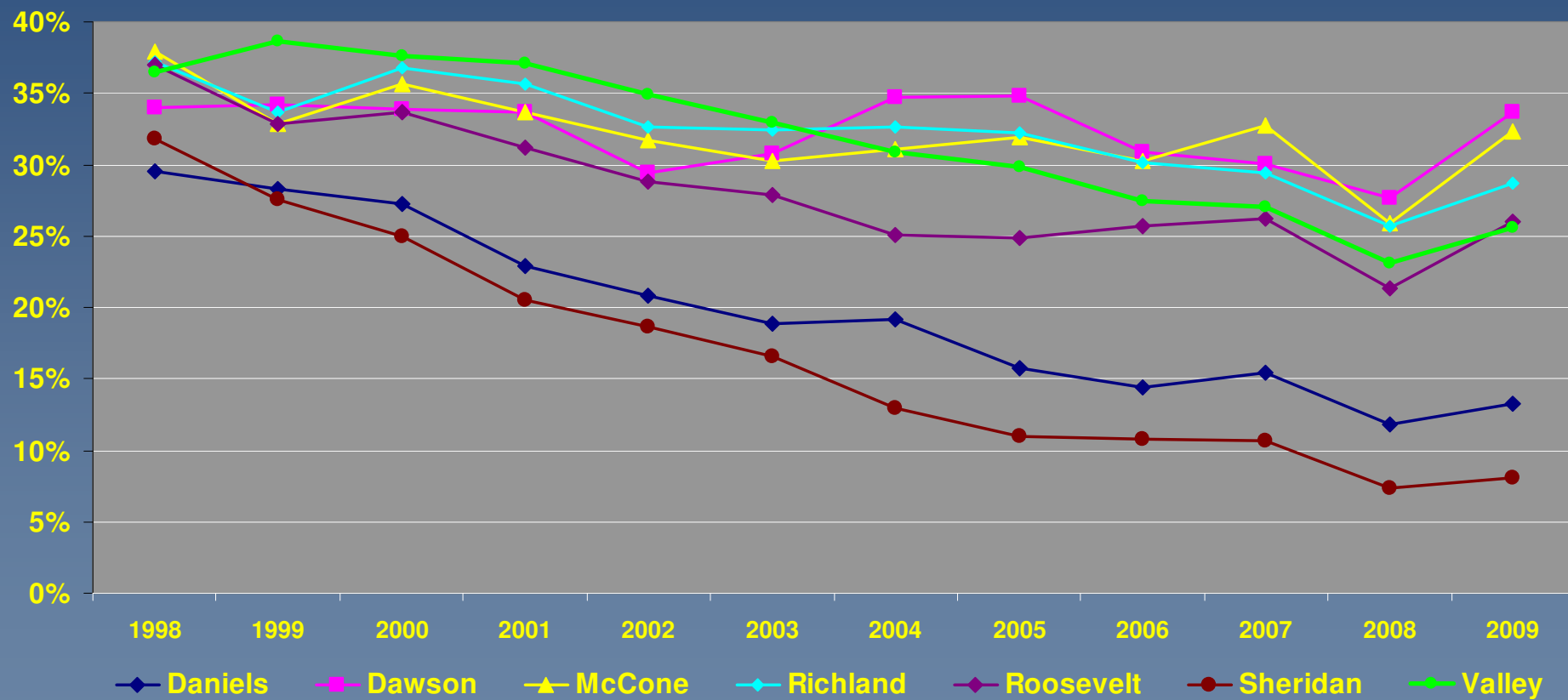


# **ACREAGE TRENDS IN NORTHEAST MONTANA**

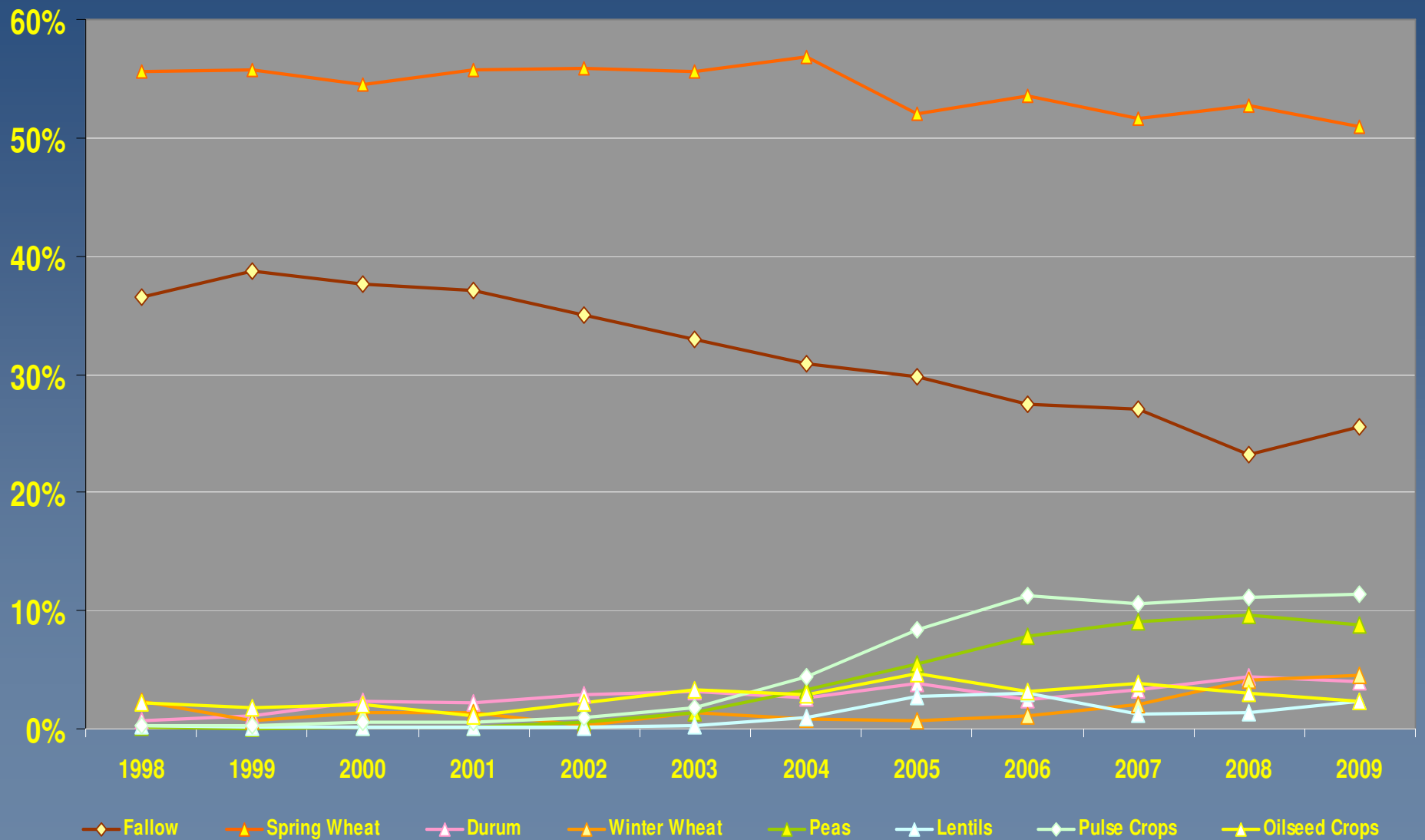
## **1998 - 2009**

**Pulse Crop Impact on  
Fallow & Wheat Acres**

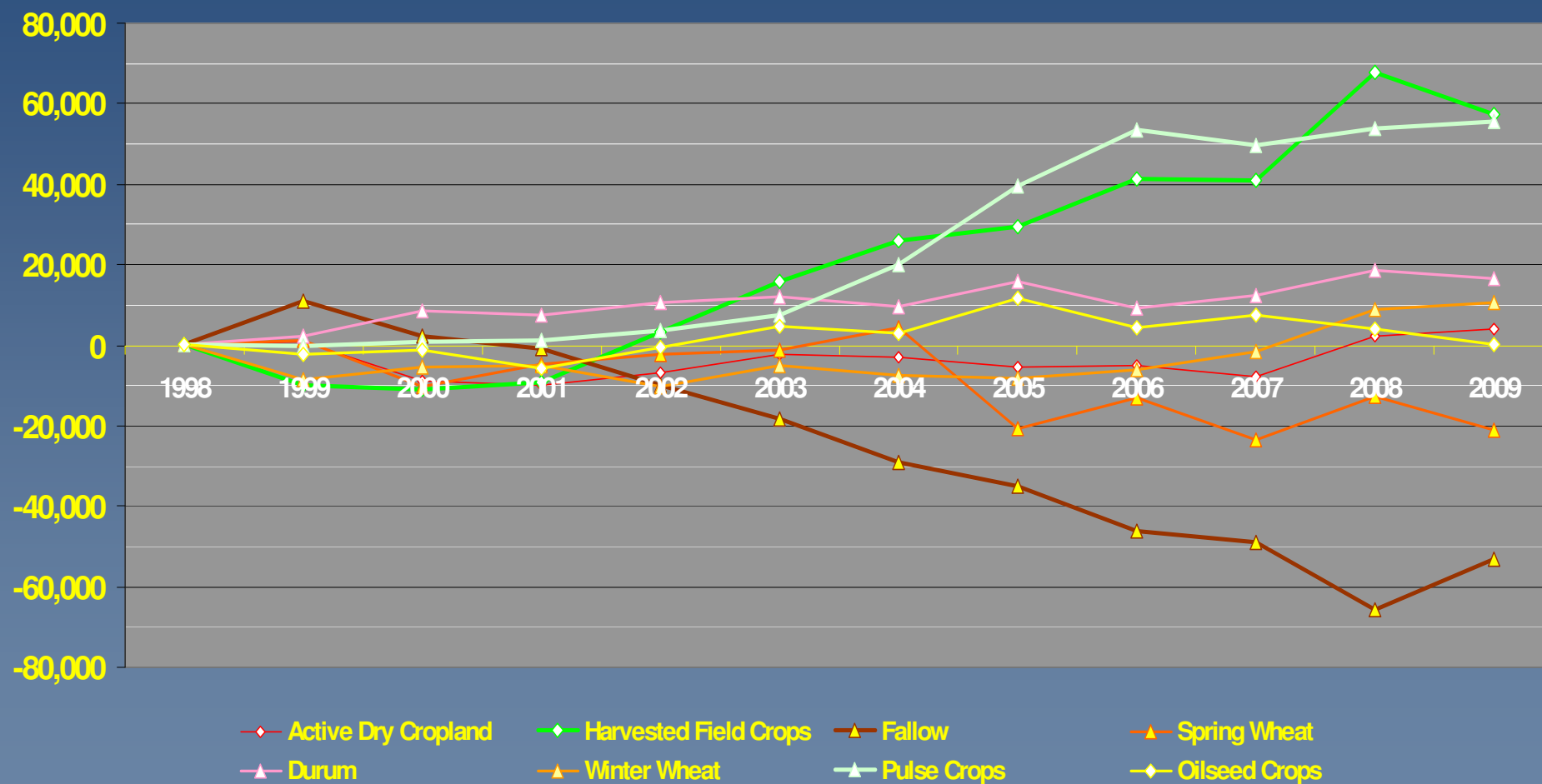
## Northeast Montana Dryland Fallow Acres - as a % of Active Dry Cropland



## Valley County - % of Active Dry Cropland



## Valley County Dry Cropland Change Since 1998 (acres)



# Why is the developing pulse crop industry important to the Montana Department of Agriculture?

## Opportunity for increased agricultural processing in Montana

- More Jobs
- More economic activity in our communities
  - Opportunity for spin-off businesses
  - Helps keep existing businesses open
  - Helps fight trend of declining rural populations
  - Diversification makes local economies more stable
- Better & more dependable prices: processing & competition create strong markets
- Allows us to ship products that are worth more
- Byproduct benefits local livestock feeding and dairy industries



# **PULSE CROP ECONOMICS**

**Approach: Comparison of Returns After Direct Costs**

**Revenue = Value of Crop + Crop Insurance Revenue**

- **Government payments assumed not to change with crop selection**

**Direct Costs:**

- **Seed**
- **Herbicides**
- **Fungicides**
- **Insecticides**
- **Fertilizer – replacement of NPK & S for yield harvested**
- **Crop Insurance**
- **Fuel & Lubrication for Field Operations**
- **Trucking from Farm to Delivery Point**
- **Operating Interest**
- **N Credit for Peas & Lentils – value of 10 lbs N / acre**

**PULSE CROP ECONOMICS**

**DRYLAND PRODUCTION**

## AREA DRYLAND AVERAGE YIELDS: (2004 - 2008)

	Low	Ave	High
WW (bu/acre)	45.0	48.1	50.8
WW-Recrop (bu/acre)	38.7	40.5	42.2
SW (bu/acre)	19.6	28.6	34.1
SW-Recrop (bu/acre)	20.5	25.9	31.5
Barley (bu/acre)	28.7	35.8	42.1
Barley-Recrop (bu/acre)	29.0	33.3	42.9
Pea (bu/acre)	9.5	22.8	29.7
Lentil* (lb/acre)	636	979	1403
Chickpea** (lb/acre)	650	1,040	1,570

\* North Central / Central Regional Averages

\*\* Statewide Averages

## YIELDS USED:

	Ave
WW (bu/acre)	48.1
WW-Recrop (bu/acre)	40.5
SW (bu/acre)	28.6
SW-Recrop (bu/acre)	25.9
Barley (bu/acre)	35.8
Barley-Recrop (bu/acre)	33.3
Pea (bu/acre)	22.8 / 25.0
Lentil (lb/acre) (979)	1000 / 1200 / 1000 / 1100
Chickpea (lb/acre) (1,040)	1,200 / 1,200 / 1,200 / 1,000
Canola (lb/acre)	975
Flax (bu/acre)	15.0
Safflower (lb/acre)	650
Mustard (lb/acre)	625
Camelina (lb/acre)	684
Dryland Alfalfa Hay (ton/acre)	1.25 (0.91 for 7 yr. stand)

## 2011 PRICE ESTIMATES

**Spring Wheat (14%)**

**\$8.50 / bu ?**

**Current Price: \$10.93**

**Durum**

**\$8.25 / bu ?**

**Current Price: \$9.41**

**Winter Wheat (Ord)**

**\$6.50 / bu ?**

**Current Price: \$7.09**

**Malt Barley**

**\$4.52 - \$6.00 / bu    \$9.41 – \$12.50 / cwt**

**Current Price: \$5.28/bu    \$11.00/cwt**

**Feed Barley**

**\$4.25 / bu    \$8.85 / cwt ?**

**Current Price: \$4.80/bu    \$10.00/cwt**

# 2011 PRICE ESTIMATES

## Peas

\$7.50/bu / \$8.25/bu    \$12.50 - \$13.75 / cwt

**Green** *Cruiser-type*  
(No. 1)

**Current Price:** \$7.50/bu    \$12.50/cwt

**Med. Yellow** (No. 1)

**Current Price:** \$7.25 /bu    \$12.08/cwt

## Feed

**Statpub (Sask):**                    \$4.83/bu    \$8.05/cwt    \$161/ton

**AB Feed Pea Benchmark:** \$6.40/bu    \$10.67/cwt    \$213/ton

2/3 – 1/3 Breakeven Rule (economic value for peas replacing grain/meal):

- \$8.36/bu corn & \$399/ton soymeal =        \$9.96/bu / \$16.60/cwt / \$332/ton
- \$4.30/bu barley & \$232/ton canola meal = \$5.39/bu / \$8.98/cwt / \$180/ton

# 2011 PRICE ESTIMATES

## Lentil

**\$21.00 - \$25.75/cwt (Chad) – used in charts**  
**\$23.00 / cwt (NDSU)**

### Laird (Large Green) No. 1

**Current Price: \$37.32/cwt**  
**Canadian Sept/Oct/Nov Offers: \$26 - \$29/cwt**

### Richlea (Medium Green) No. 1

**Current Price: \$31.66/cwt**  
**Canadian Sept/Oct/Nov Offers: \$24.25 - \$26.90/cwt**

### Eston (Small Green) No. 1

**Current Price: \$31.39/cwt**  
**Canadian Sept/Oct/Nov Offers: \$24.25 - \$26.90/cwt**

### Red No. 1

**Current Price: \$21.42/cwt**  
**Canadian Sept/Oct/Nov Offers: \$20.70 - \$23/cwt**

# 2011 PRICE ESTIMATES

**Chickpea**

**\$24.50 - \$32/cwt (Chad)**

**\$24.50 / cwt (NDSU)**

**Kabuli 9mm (No. 1)**

**Current Price: \$35.53/cwt**

**Canadian S/O/N Offers: \$32 – \$35.50/cwt**

**Frontier 7mm (No. 1)**

**Current Price: \$29.80/cwt**

**Canadian S/O/N Offers: \$26.65 – \$27.70/cwt**

**B-90 (No. 1)**

**Current Price: \$25.55/cwt (Canada)**

*Controlled by United Pulse in US: probably similar to  
higher than current price listed*

**Desi**

**Current Price: \$25.54/cwt**

**Canadian S/O/N Offers Desi: \$26.90 - \$27.95/cwt**



# 2011 PRICE ESTIMATES

**Mustard**

**\$30/cwt +/- (\$35/cwt?) (Chad)**

**\$23.80/cwt (NDSU)**

**Current Price: \$31.00**

**Canola**

**\$23/cwt (Chad)**

**\$27.50 / cwt (Nov 11 ICE Futures on 4/11/11)**

**Current Price: \$26.60/cwt**

**Flax**

**\$13.50/bu / \$24.11/cwt (Chad)**

**\$11.49/bu / \$20.52/cwt (NDSU)**

**Current Price: \$14.07/bu / \$25.13/cwt**

**Safflower**

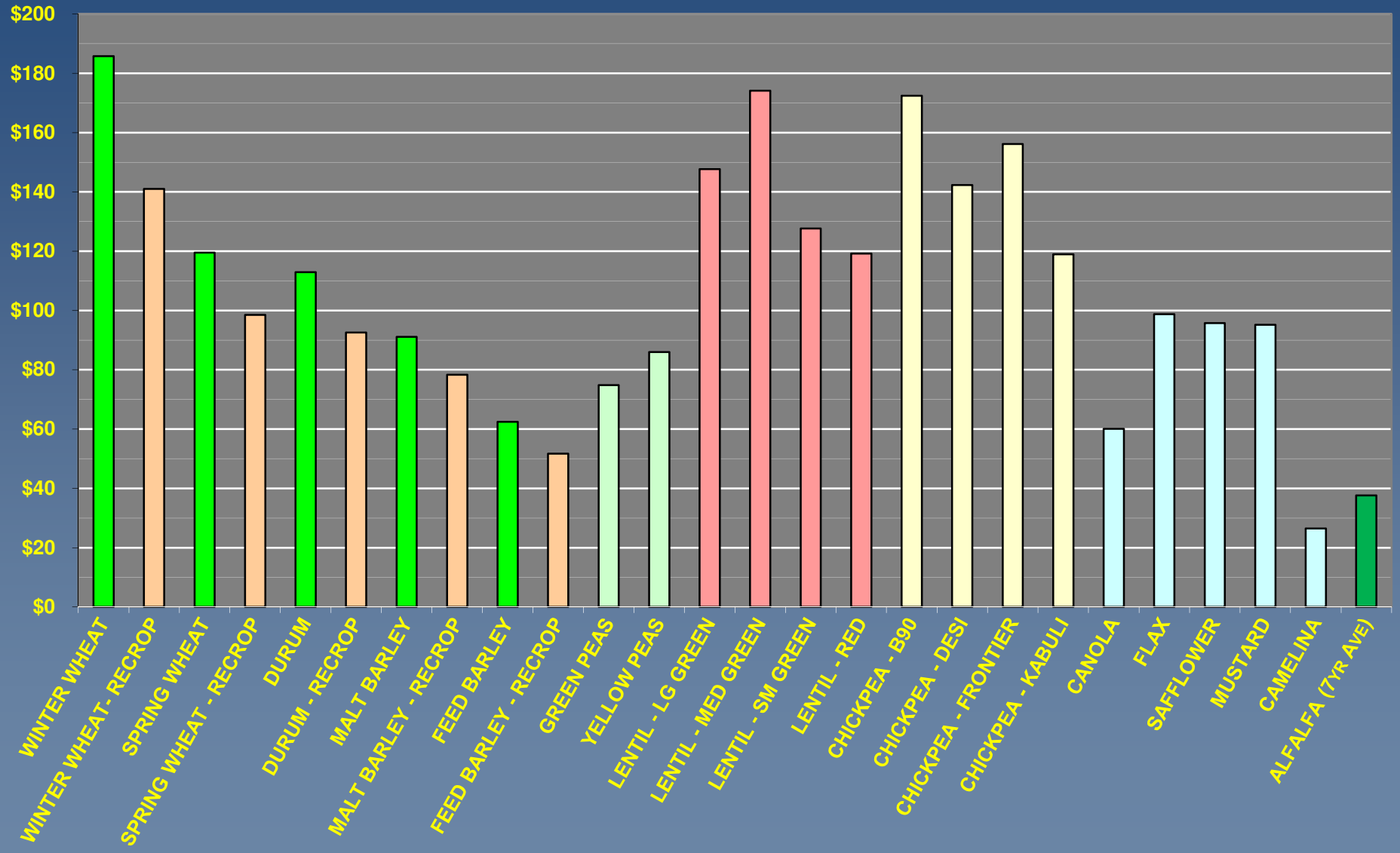
**\$26 - \$28 / cwt**

**Current Price: ???**

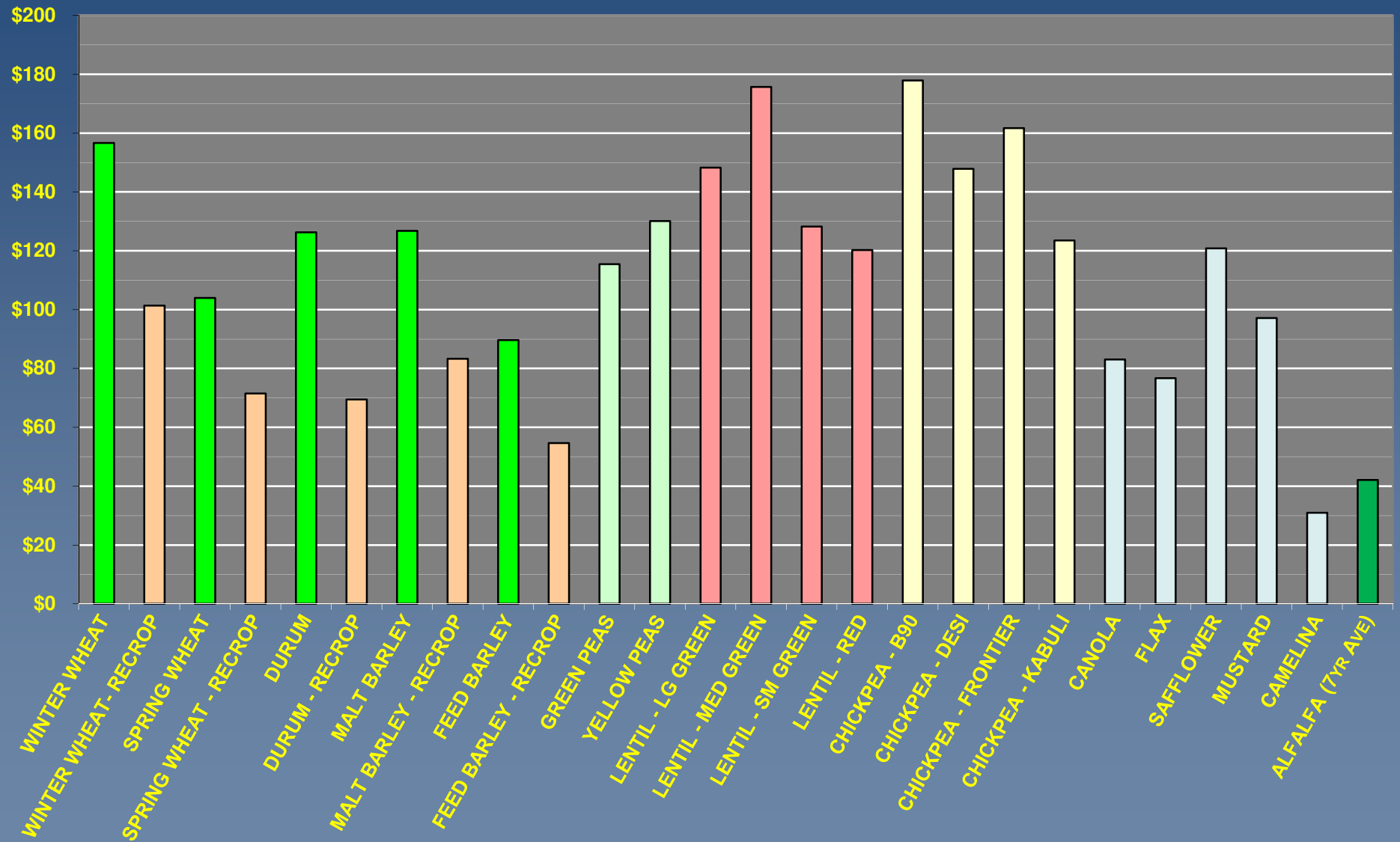
**Camelina**

**\$15.00 / cwt**

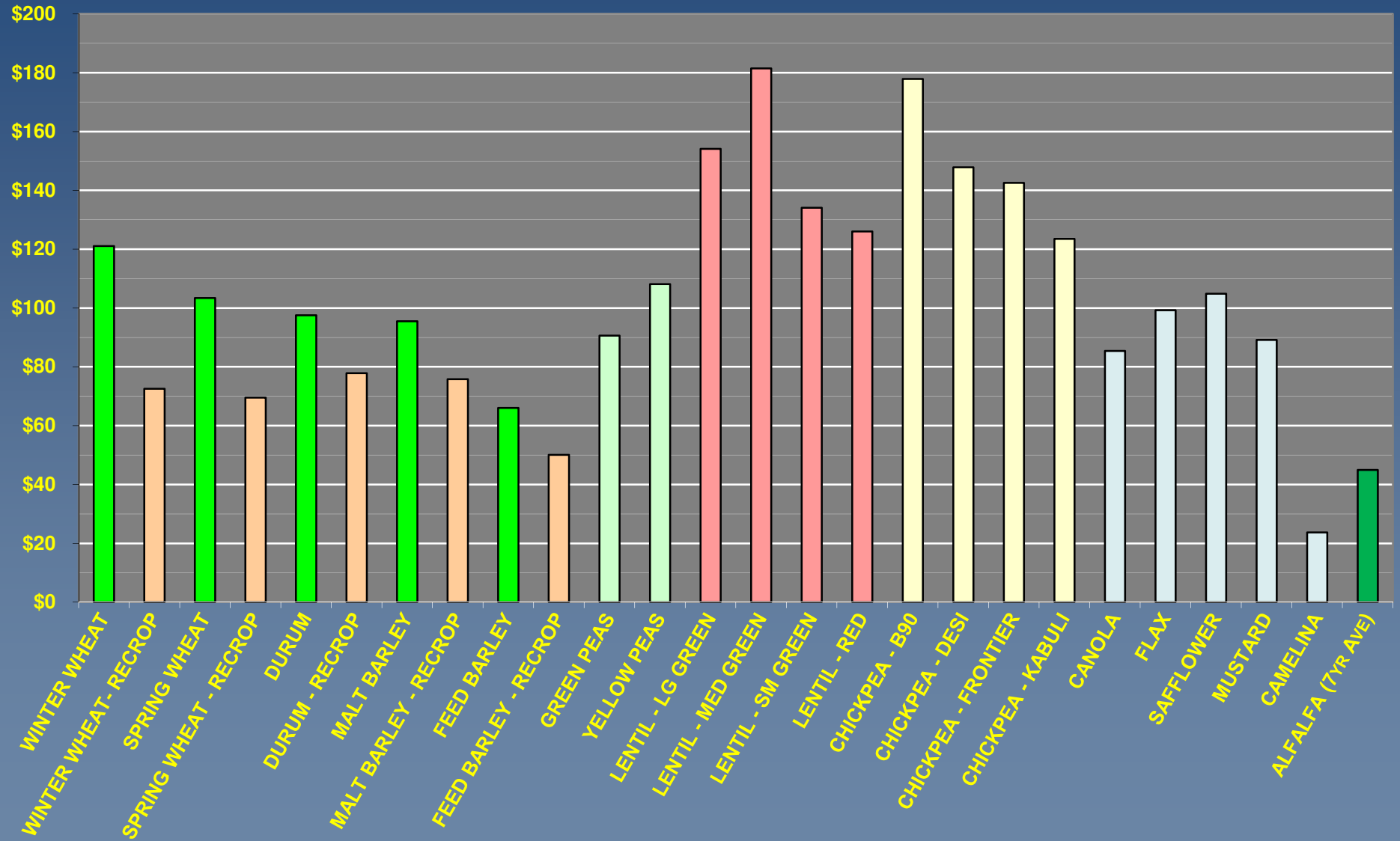
**CROP COMPARISON**  
**Central Montana 2011 Estimate**  
**Return After Direct Costs (\$/acre)**



**CROP COMPARISON**  
**North Central Montana 2011 Estimate**  
**Return After Direct Costs (\$/acre)**



**CROP COMPARISON**  
**Northeast Montana 2011 Estimate**  
**Return After Direct Costs (\$/acre)**



# PULSE CROP ECONOMICS

## ROTATION COMPARISONS

**Approach: Comparison of Average Annual Returns After Direct Costs**

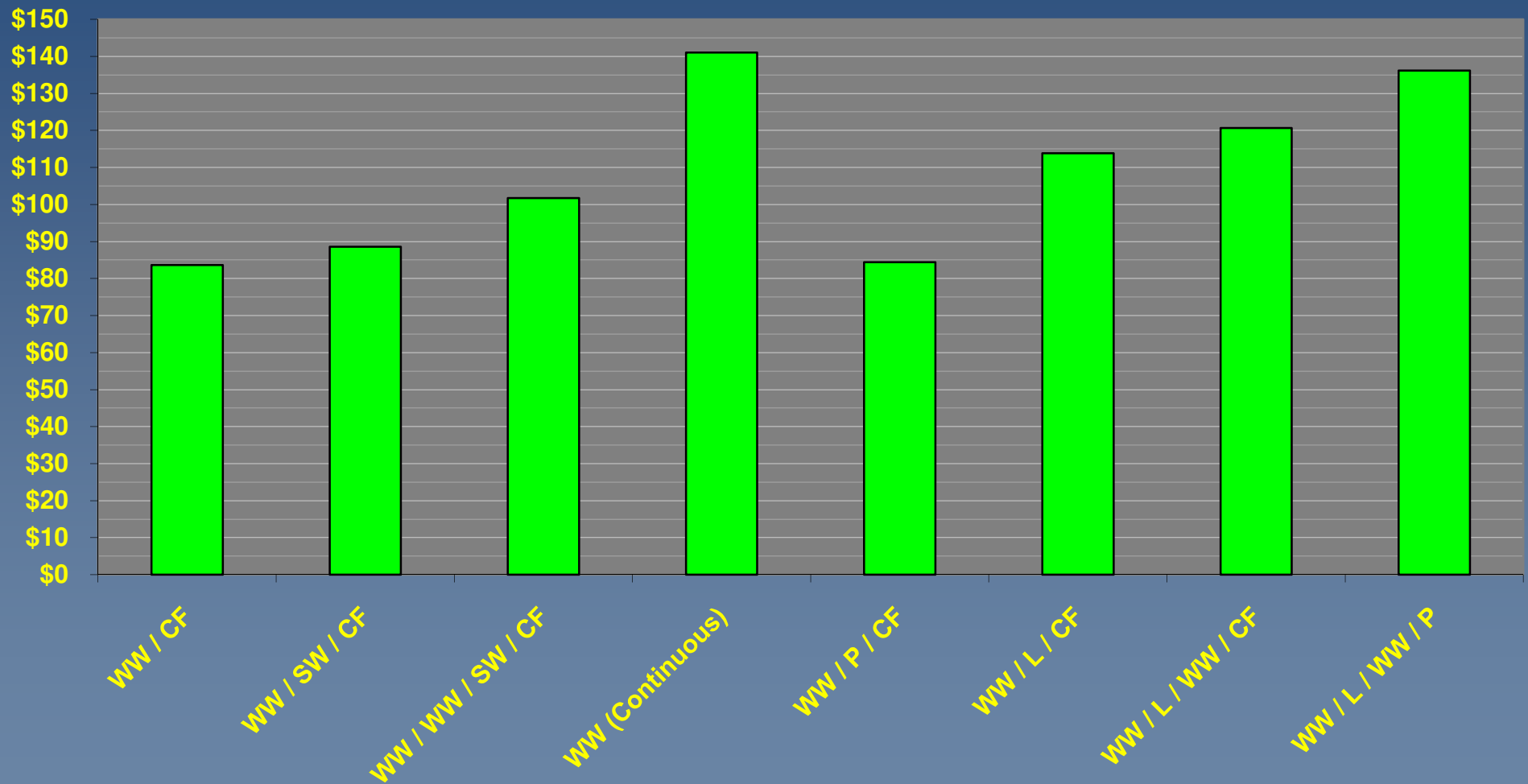
Why compare rotations instead of individual crops?

- Average annual returns are needed for comparability
- Rotations may vary for a variety of reasons and objectives
  - Cropping Intensity
  - Moisture & Weather Conditions
  - Integrated Pest / Disease Management / Soil Building Objectives
  - Income Diversification & Risk Management Decisions
  - Government Program Requirements (CSP)
  - Carbon Credit Trading Requirements
  - Workload
- Comparing rotations acknowledges that there are constraints to sequences of crops

# Rotation Comparison

## Average Annual Return After Direct Costs

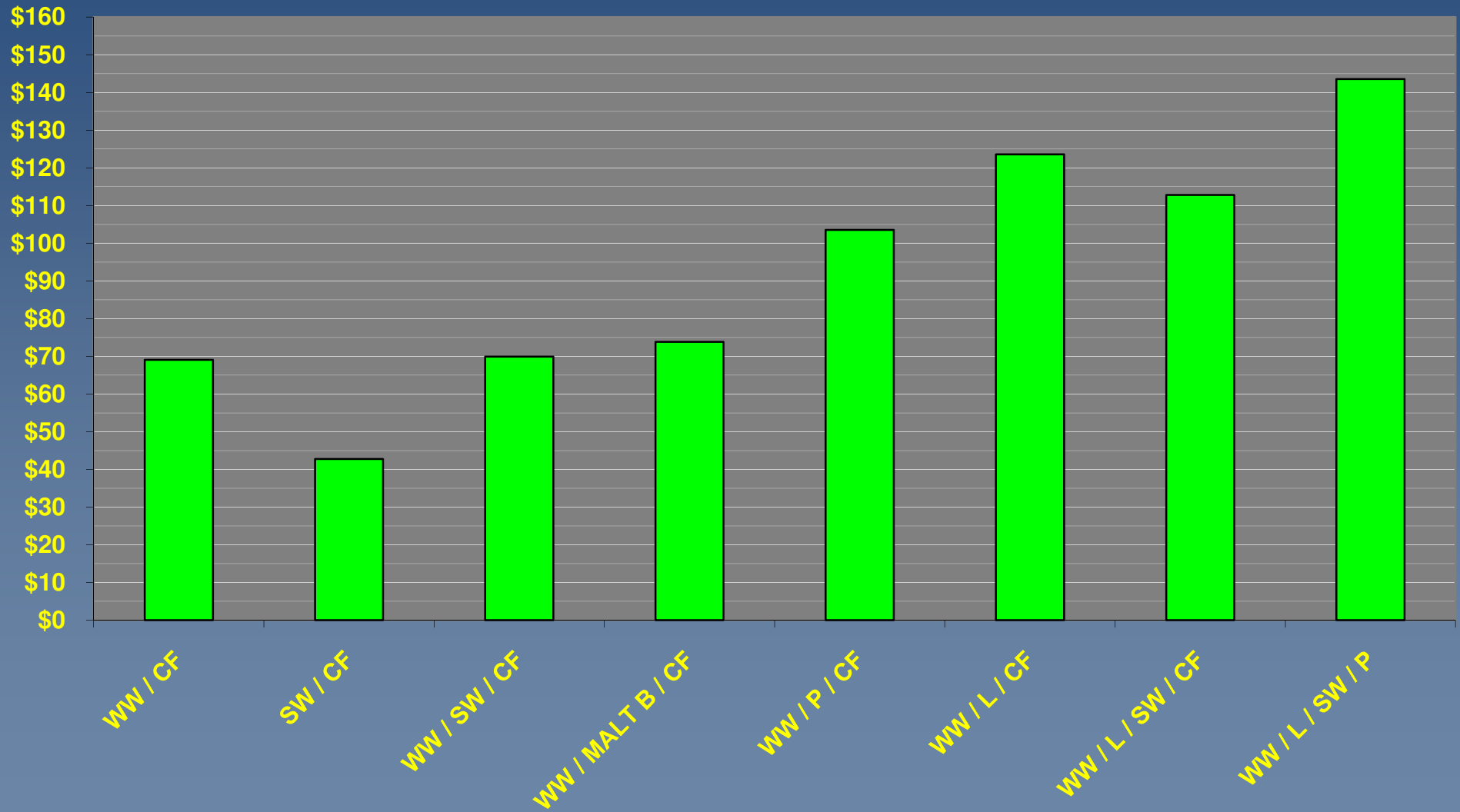
### Central Montana Dryland - 2011 Estimate



# Rotation Comparison

## Average Annual Return After Direct Costs

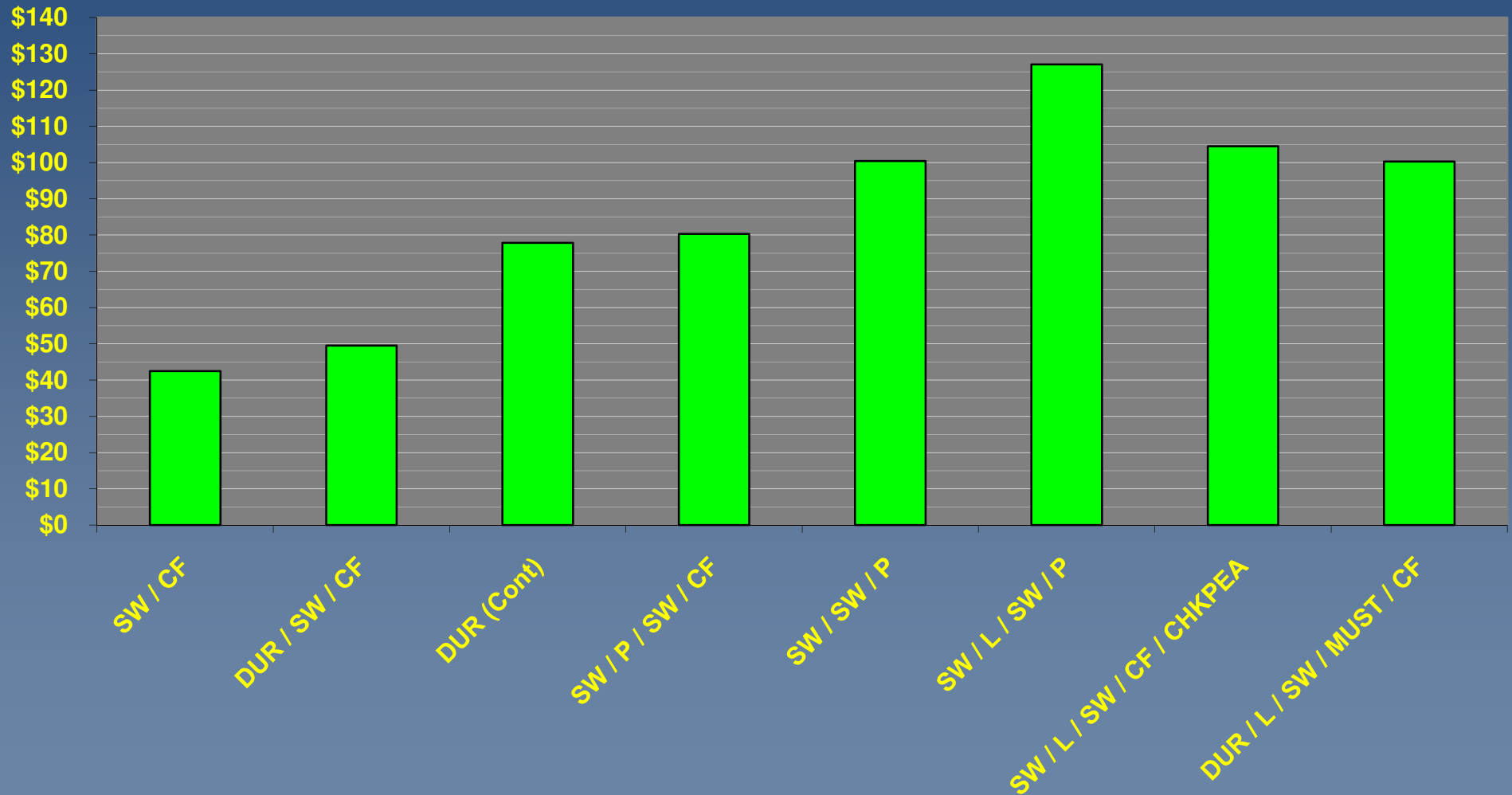
### North Central Montana Dryland - 2011 Estimate



# Rotation Comparison

## Average Annual Return After Direct Costs

### Northeast Montana Dryland - 2011 Estimate





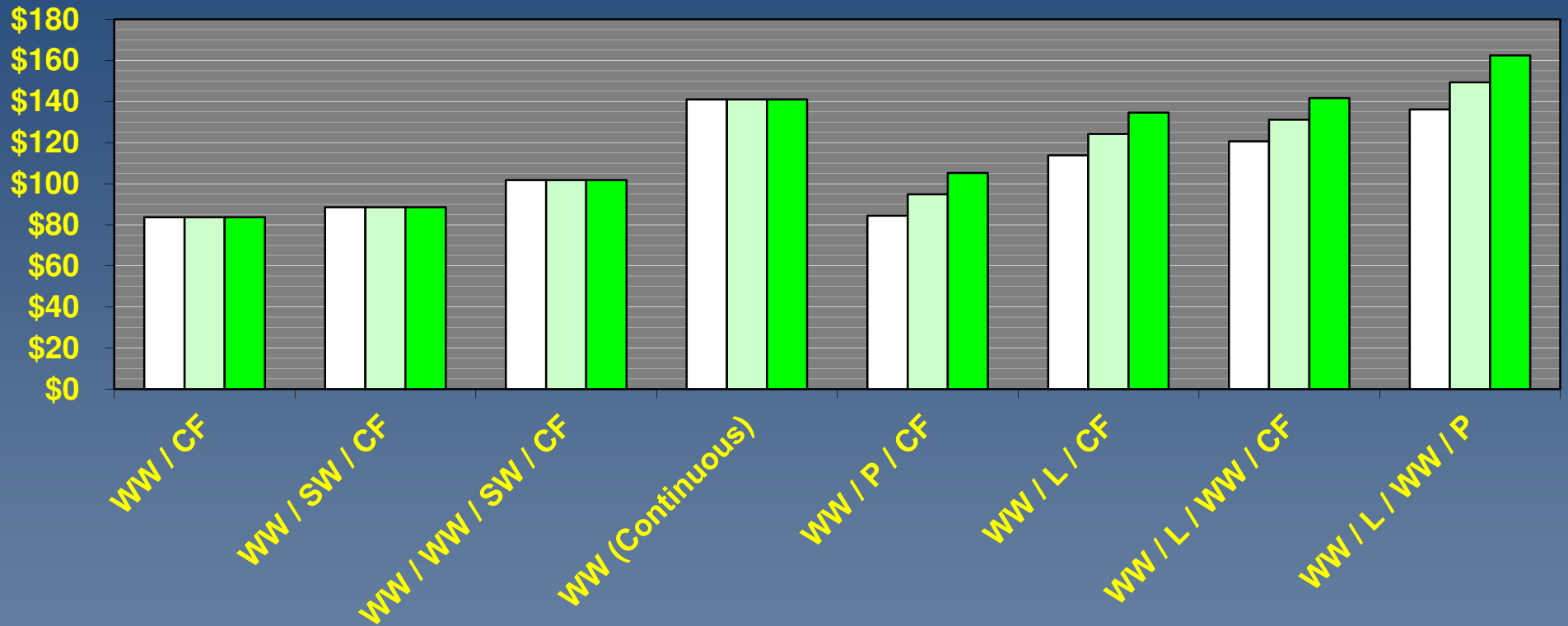
# PULSE CROP ECONOMICS

Estimated average returns of rotations **did not** incorporate rotational benefits:

- Yield Enhancement
- Quality Improvement

**WHAT IF THEY DID?**

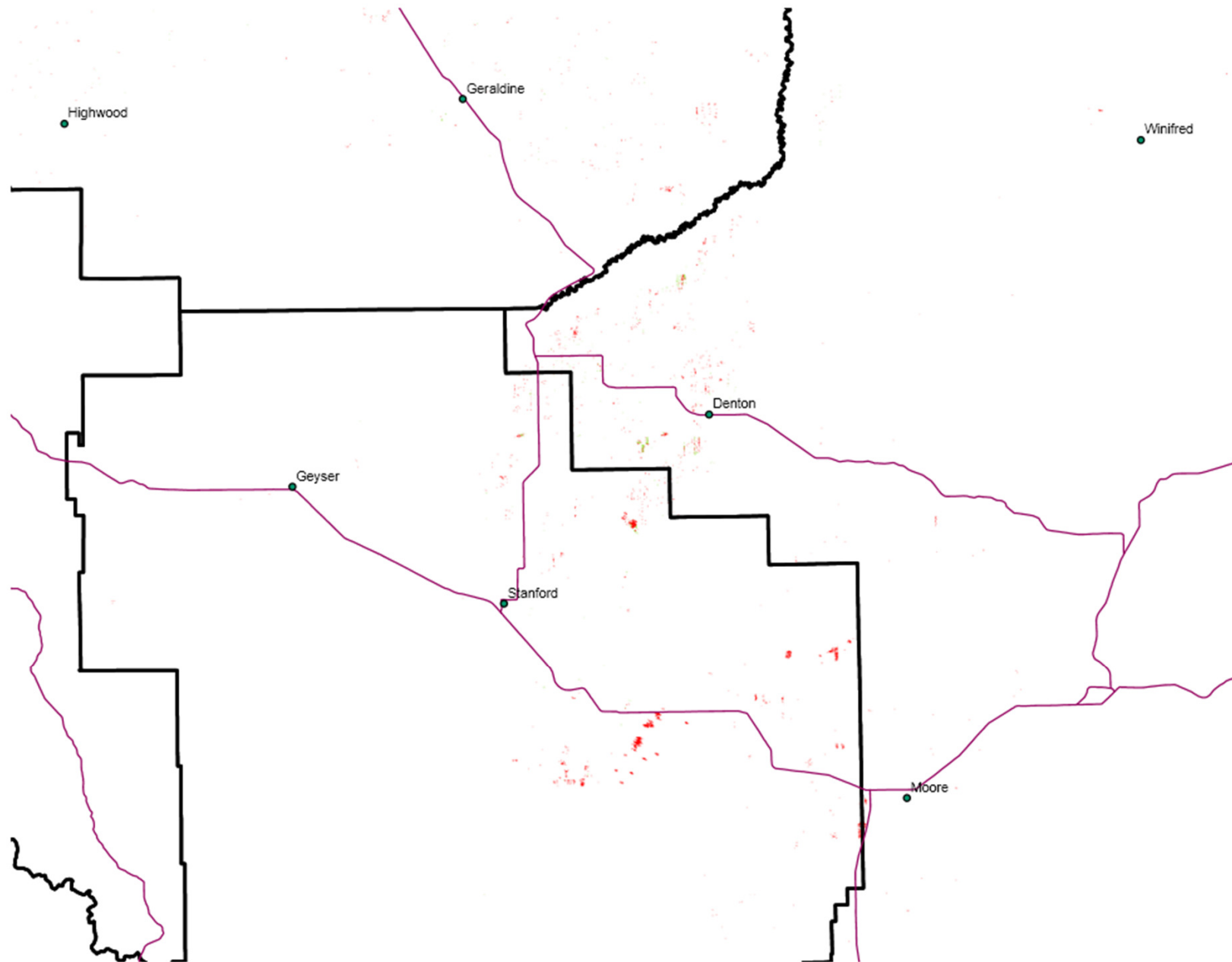
**Central Montana Dryland Crop Rotations  
2011 Prices/Costs / Average Yields  
Average Return After Direct Costs (\$/acre)**



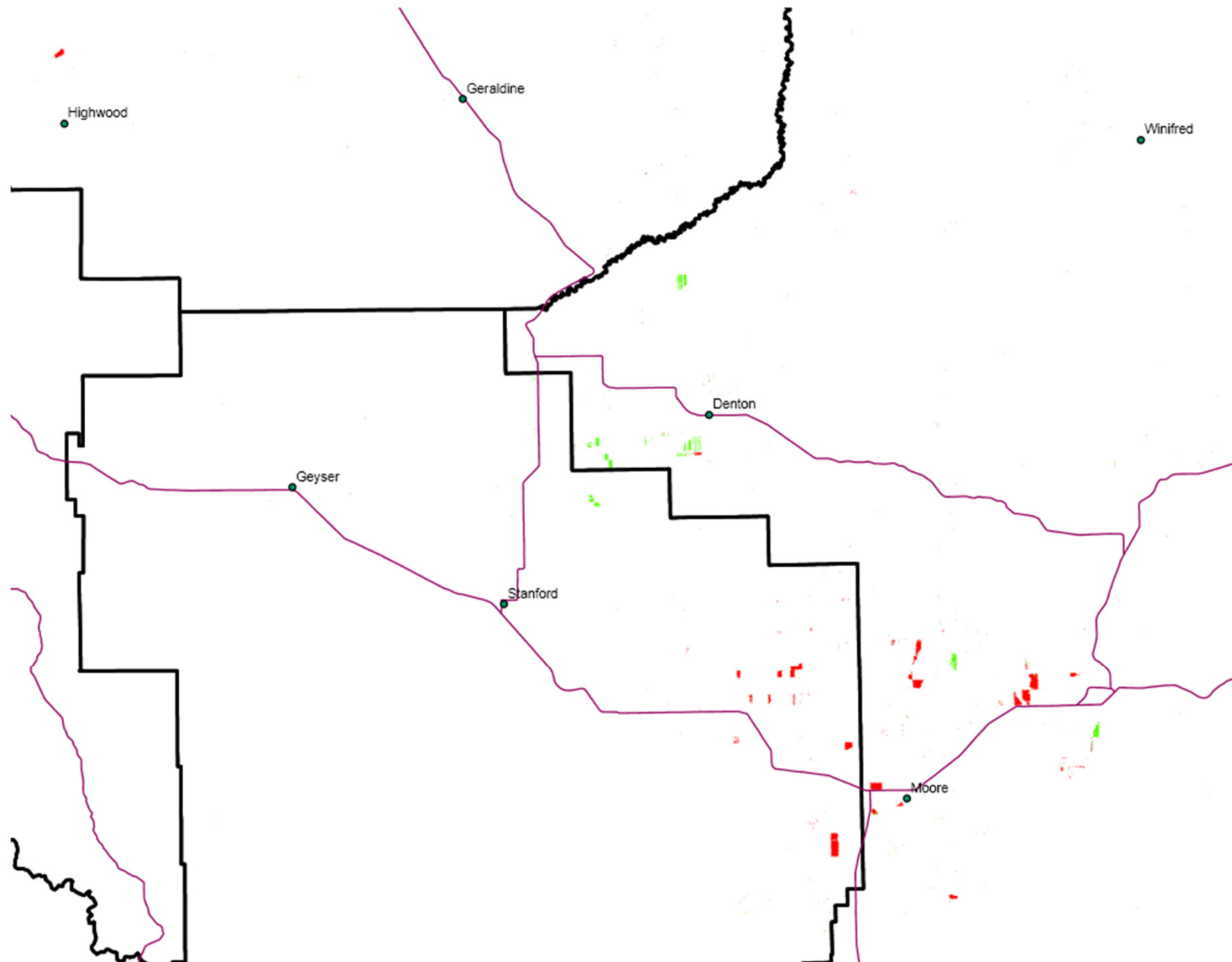
- Return After Direct Costs - Ignoring Rotational Benefit (\$/acre)
- Return After Direct Costs - With Rotational Benefit (\$/acre)
- Return After Direct Costs - With Rotational Benefit - Optimistic (\$/acre)

**WHERE ARE THE PULSE ACRES?**

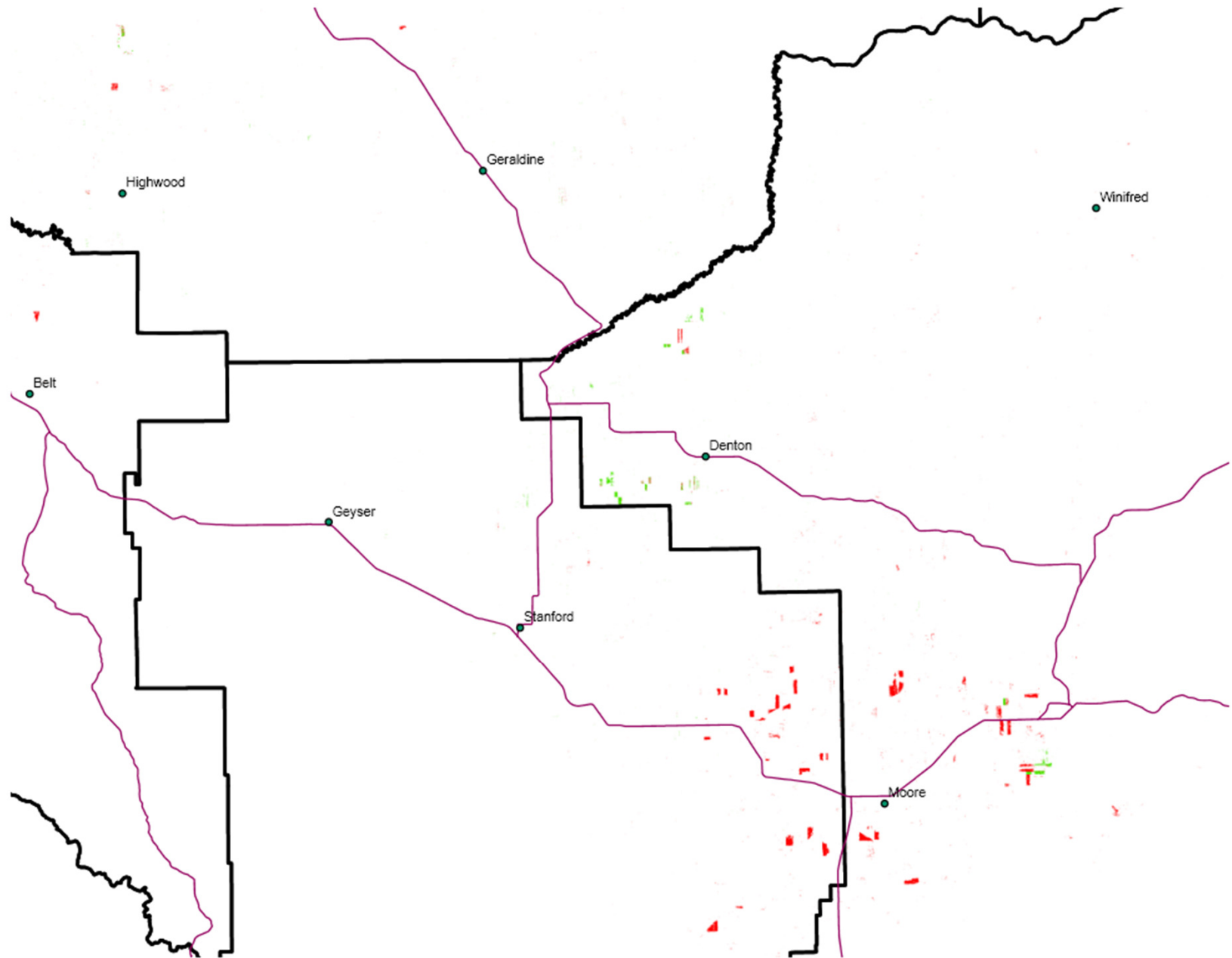
## CENTRAL MONTANA: 2007 PEAS & LENTILS



## CENTRAL MONTANA: 2009 PEAS & LENTILS

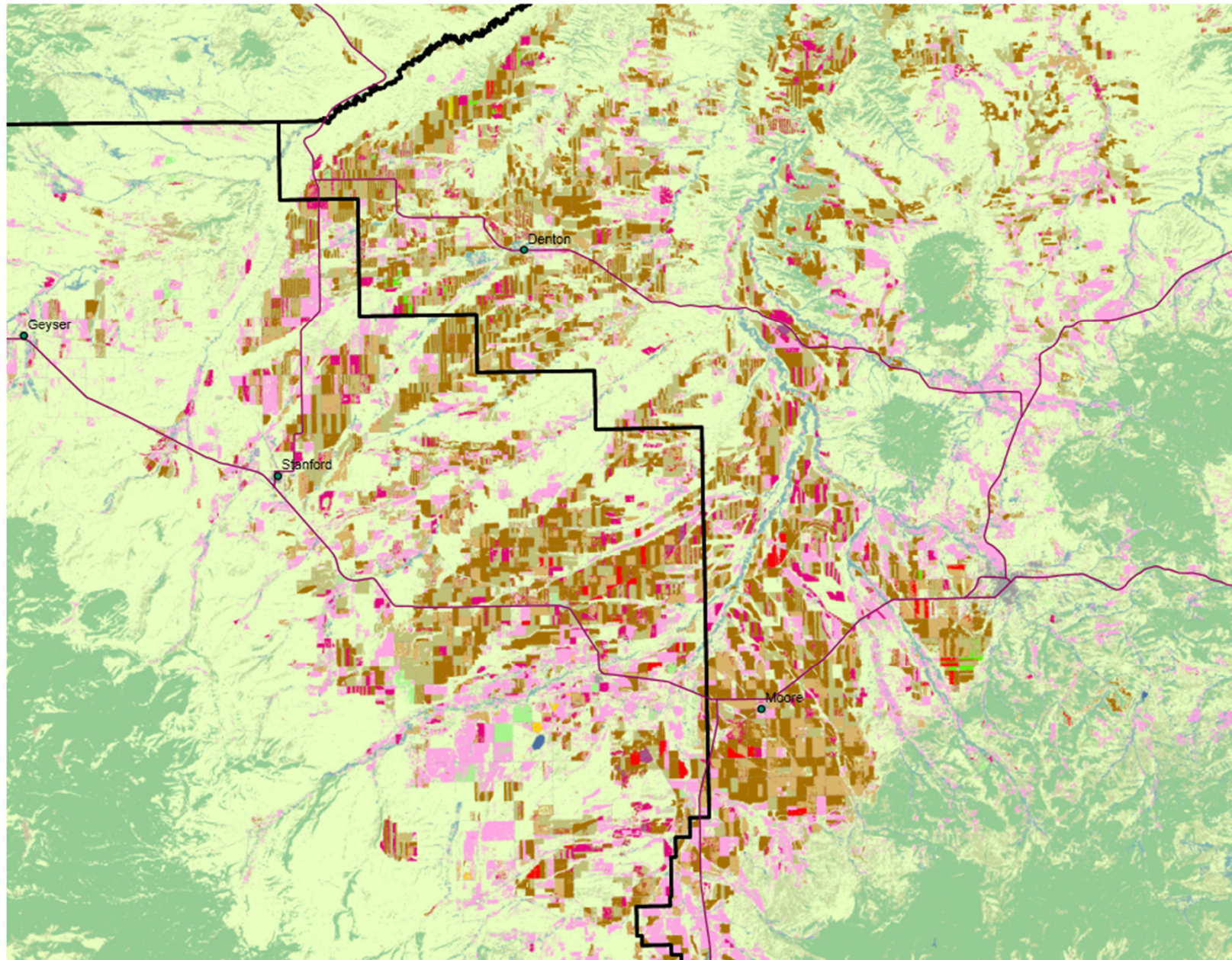


## CENTRAL MONTANA: 2010 PEAS & LENTILS

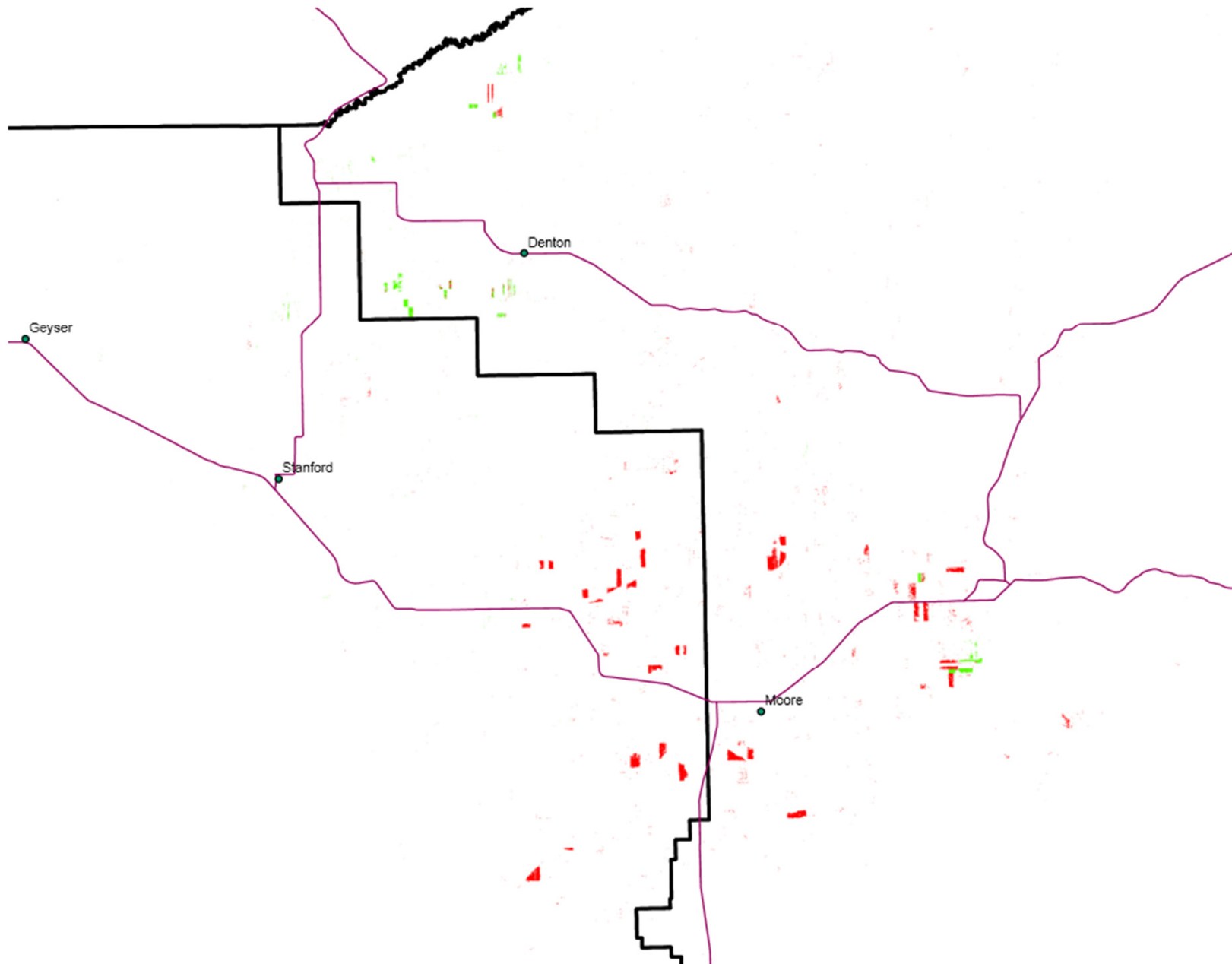




## CENTRAL MONTANA: 2010 PEAS & LENTILS

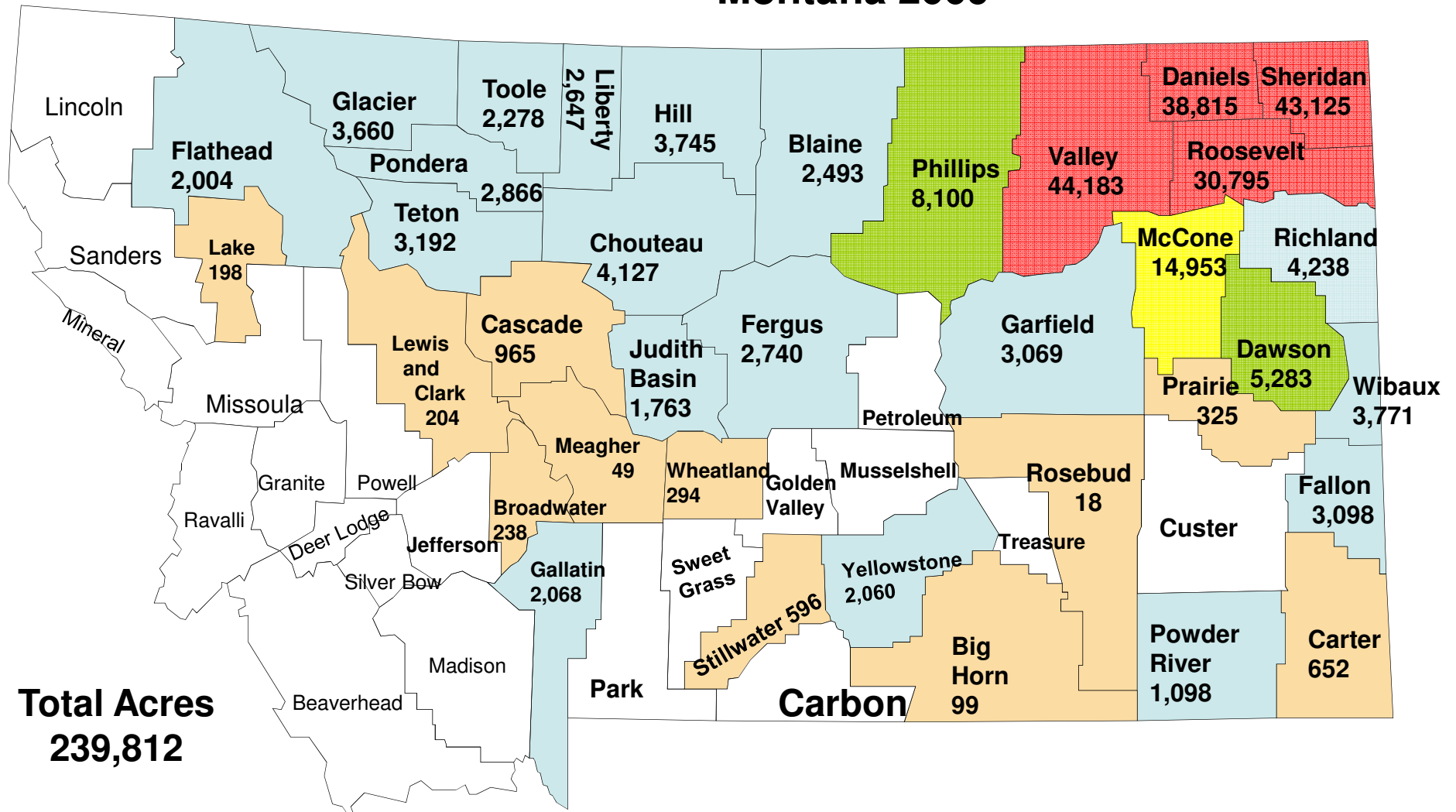


## CENTRAL MONTANA: 2010 PEAS & LENTILS





## Field Pea Planted Acres Montana 2009



1 – 1,000 acres

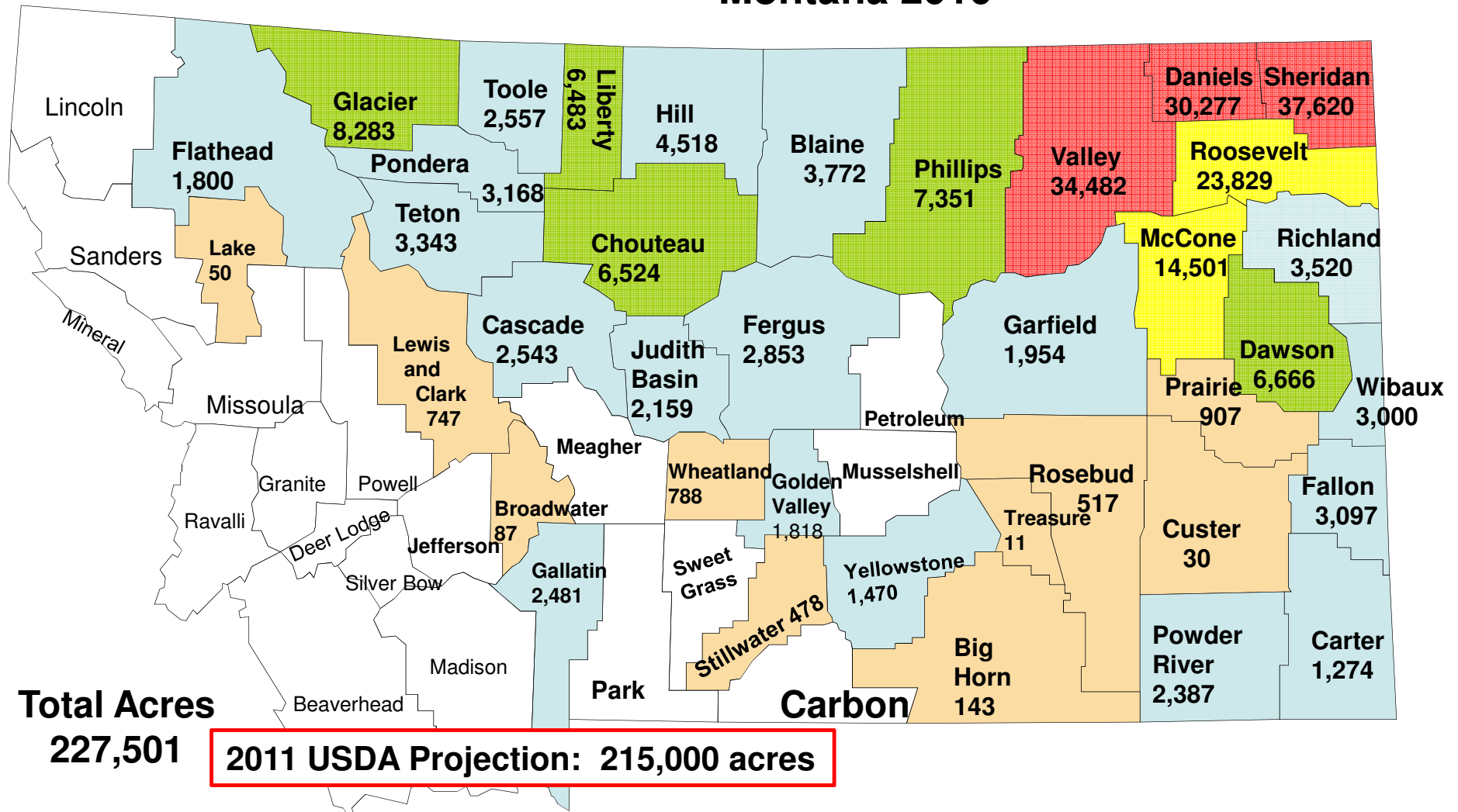
1,001 – 5,000 acres

5,001 – 10,000 acres

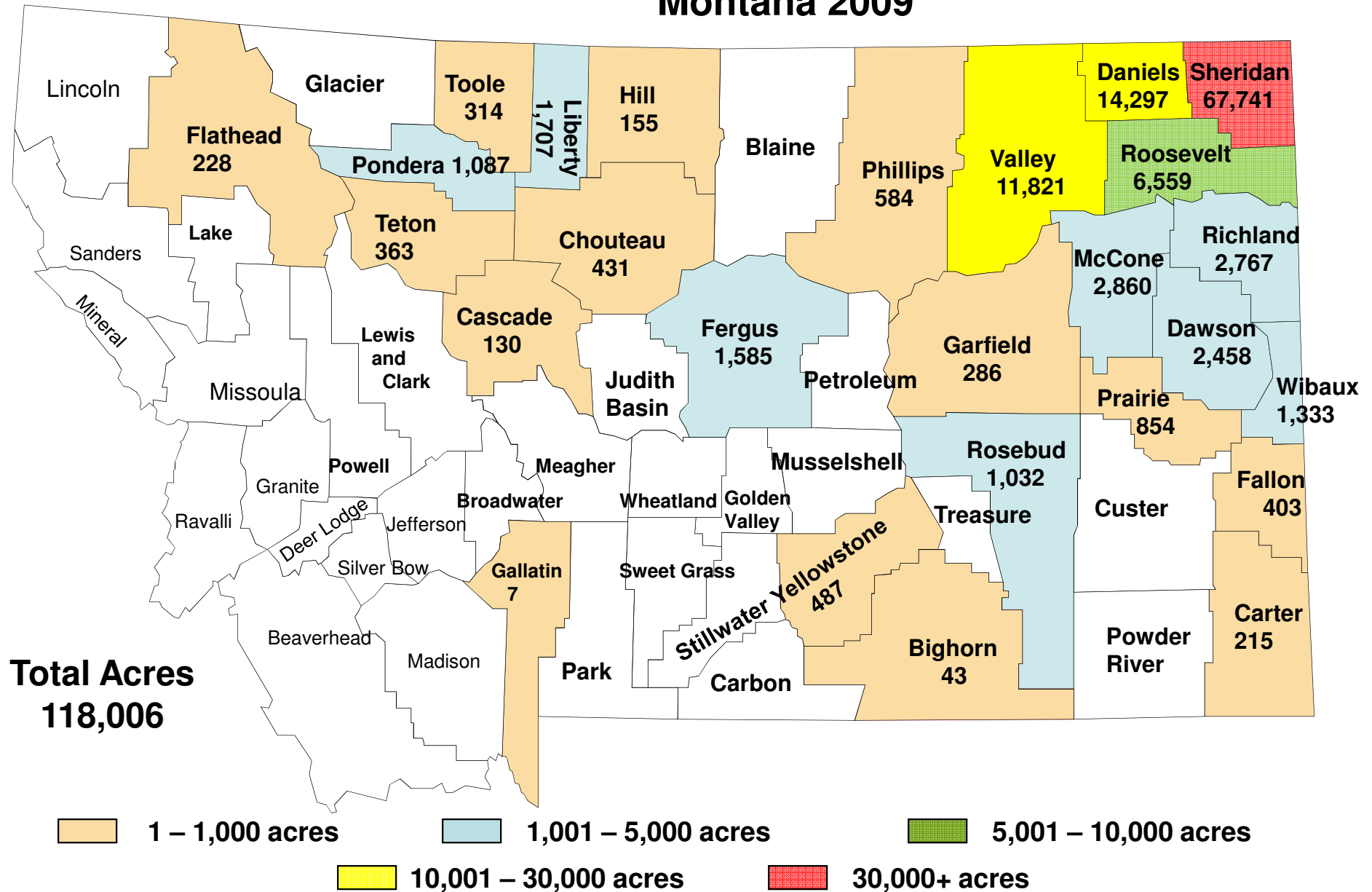
10,001 – 30,000 acres

30,000+ acres

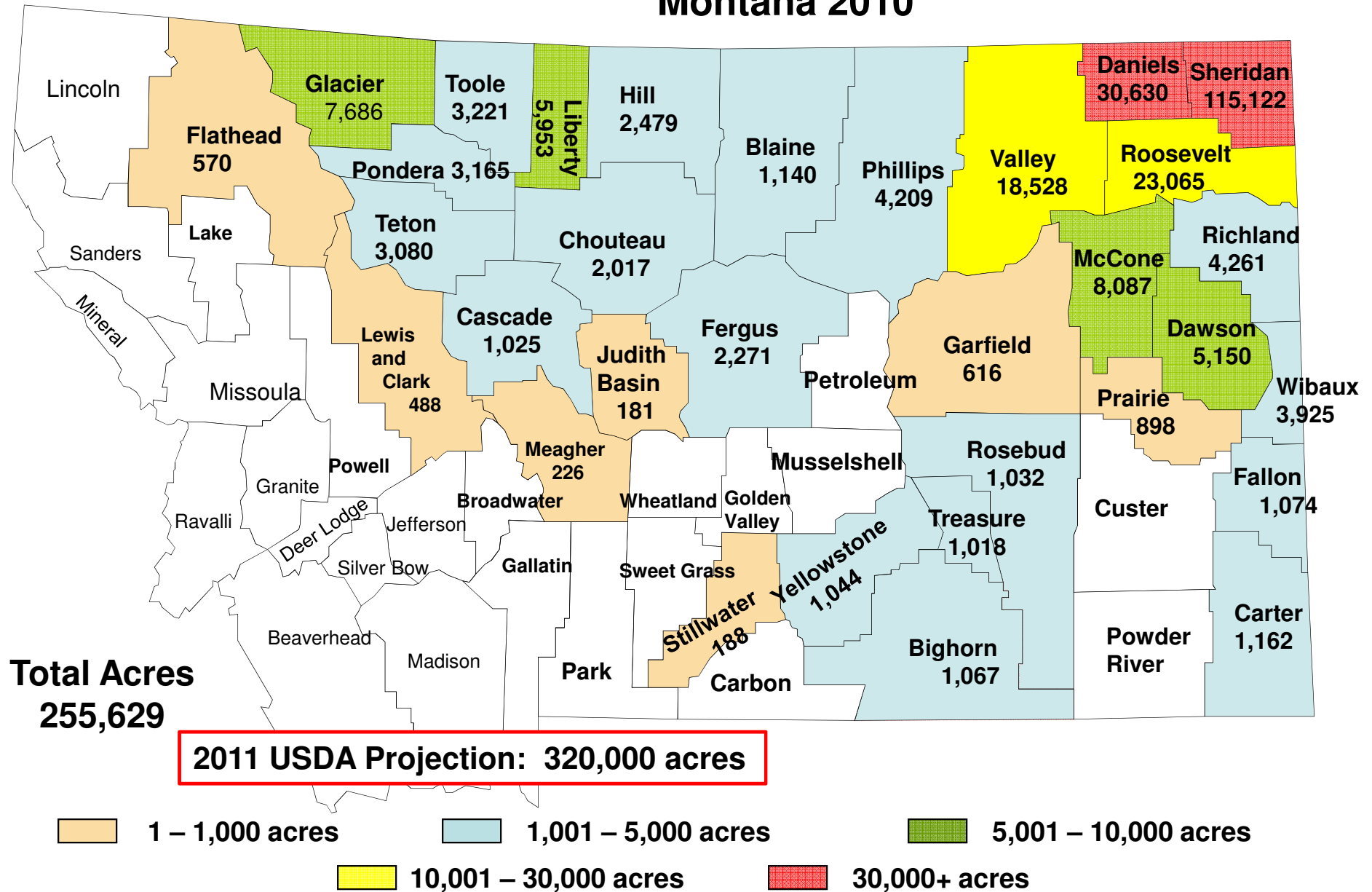
## Field Pea Planted Acres Montana 2010



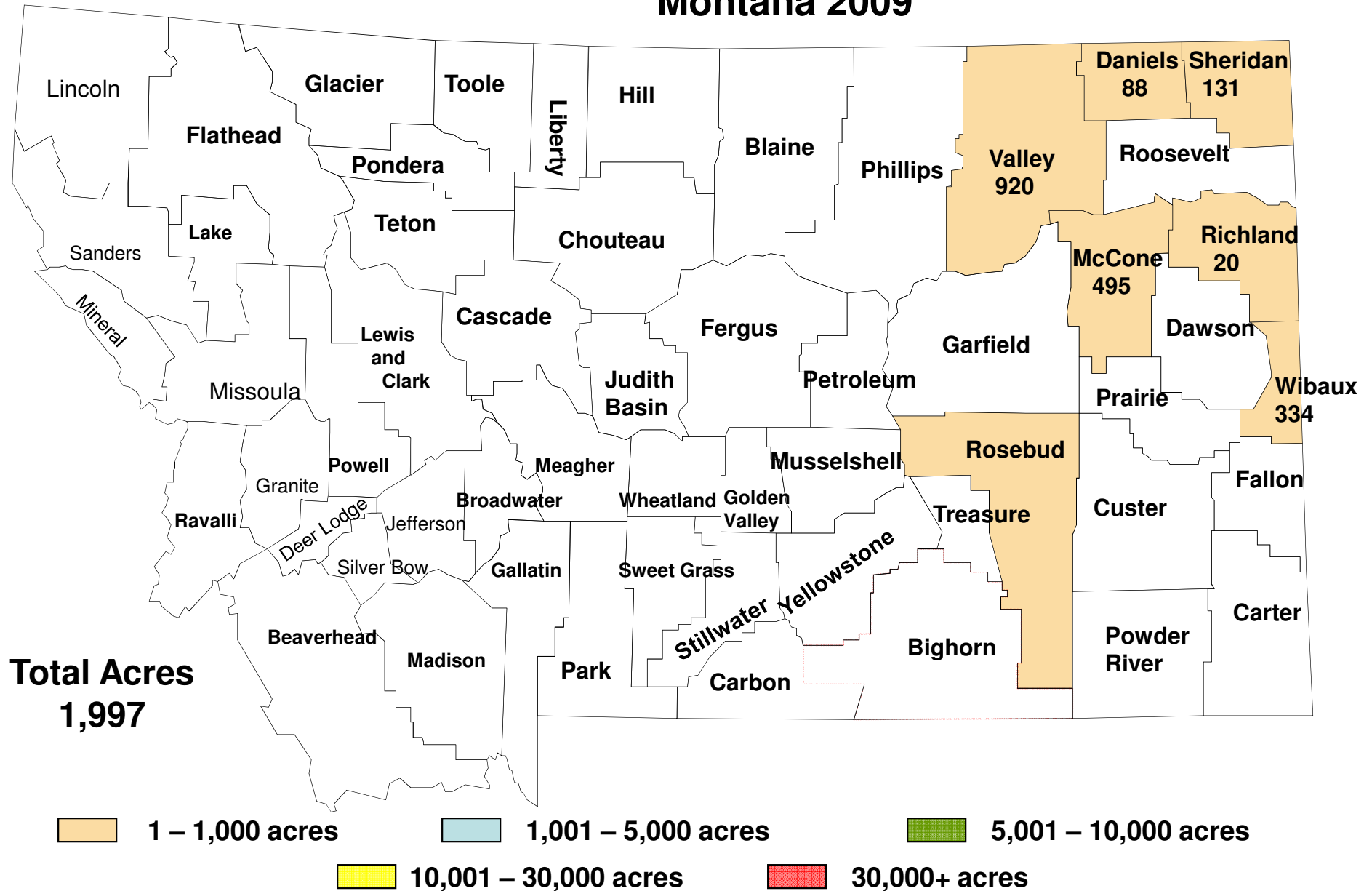
## Lentils Planted Acres Montana 2009



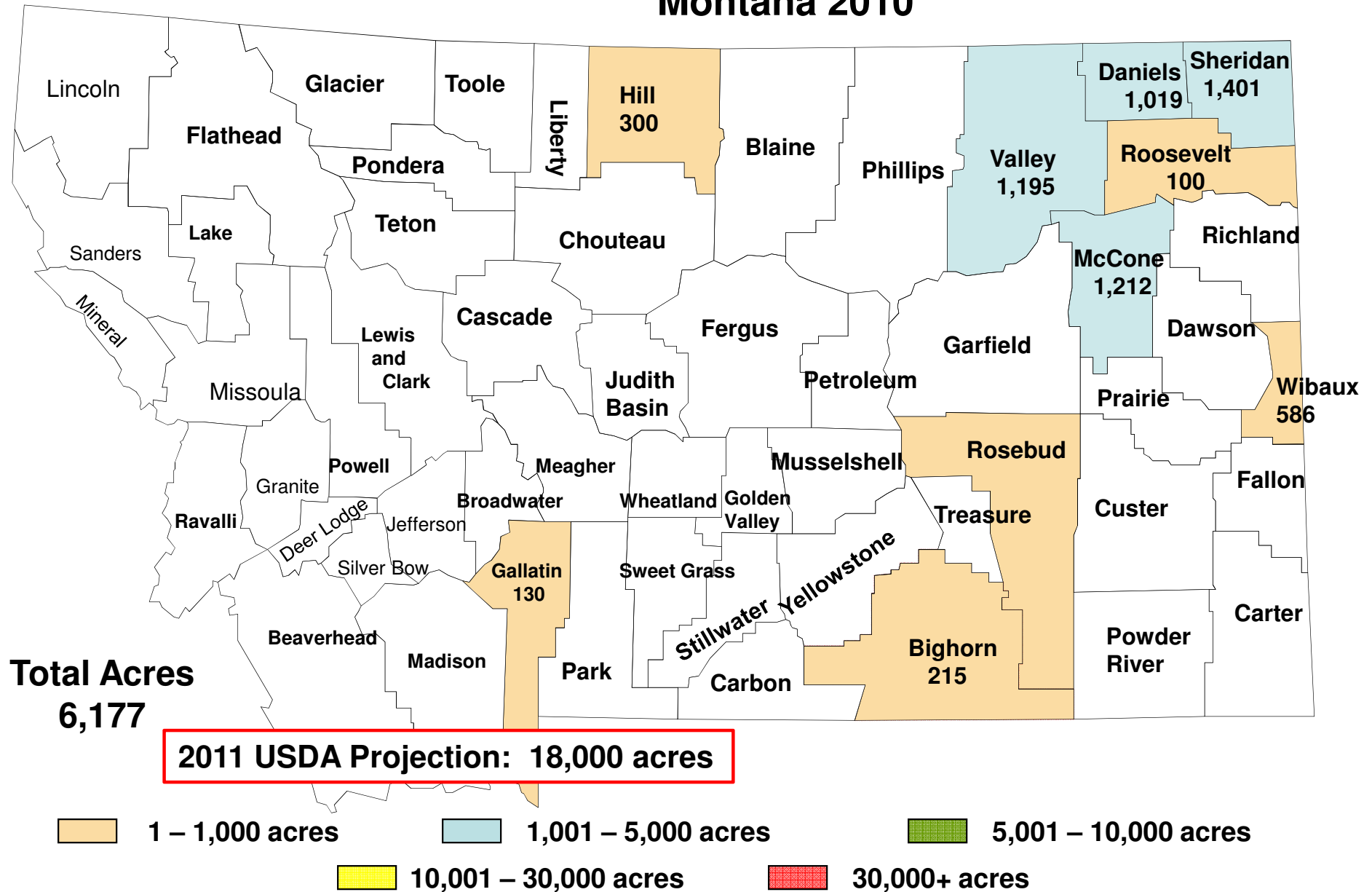
## Lentils Planted Acres Montana 2010



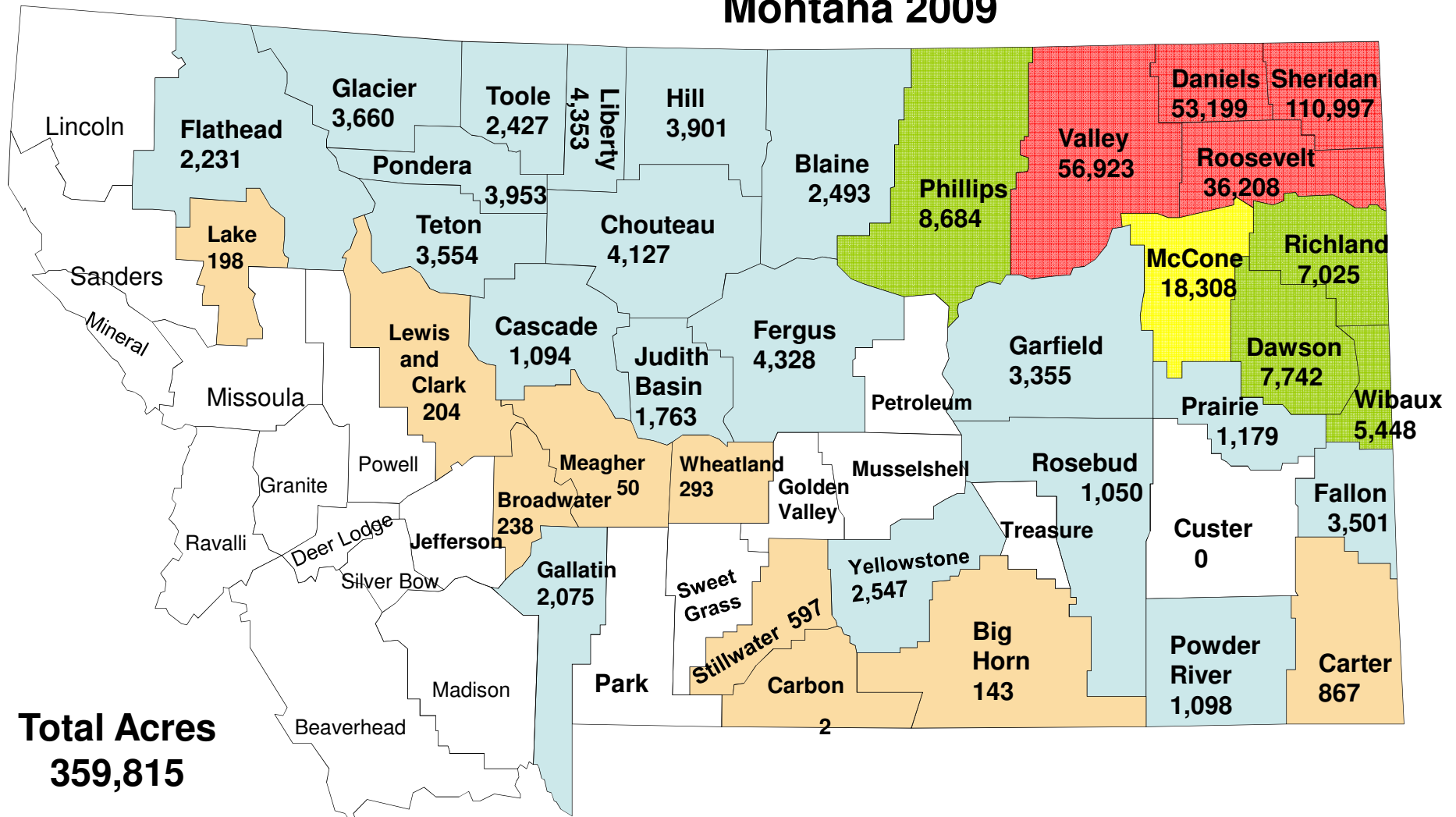
## Chickpeas Planted Acres Montana 2009



## Chickpeas Planted Acres Montana 2010

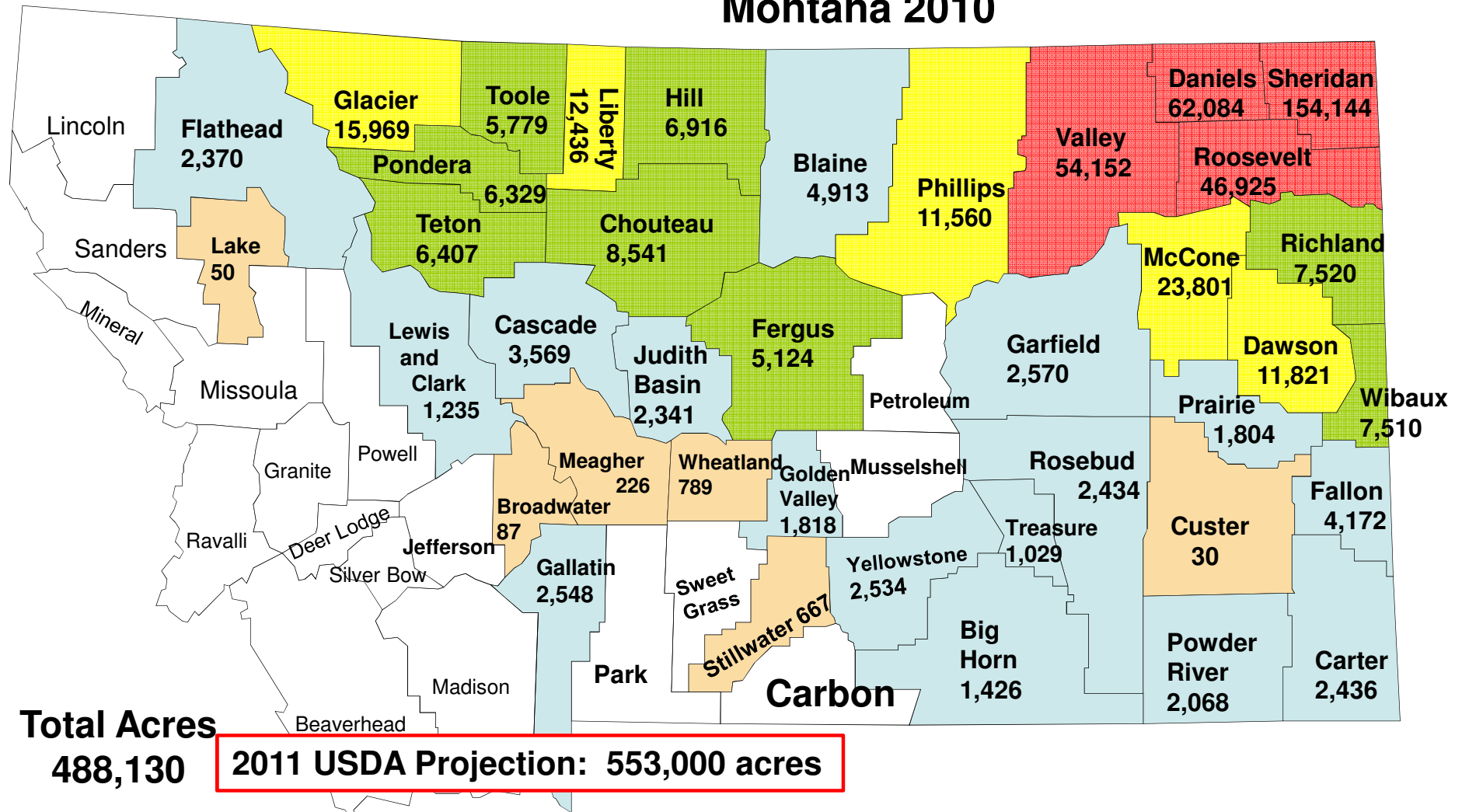


## Pulse Crop Planted Acres Montana 2009





## Pulse Crop Planted Acres Montana 2010





## 2011 USDA NASS Projections:

<b>PEA ACRES:</b>	<b>2009</b>	<b>2010</b>	<b>2011 (Projected)</b>
<b>MONTANA</b>	<b>240,000</b>	<b>220,000</b>	<b>215,000</b>
<b>NORTH DAKOTA</b>	<b>490,000</b>	<b>430,000</b>	<b>275,000</b>
<b>UNITED STATES</b>	<b>863,300</b>	<b>756,000</b>	<b>586,000</b>

<b>LENTIL ACRES:</b>	<b>2009</b>	<b>2010</b>	<b>2011 (Projected)</b>
<b>MONTANA</b>	<b>122,000</b>	<b>260,000</b>	<b>320,000</b>
<b>NORTH DAKOTA</b>	<b>165,000</b>	<b>265,000</b>	<b>275,000</b>
<b>UNITED STATES</b>	<b>415,300</b>	<b>658,000</b>	<b>710,000</b>

<b>CHICKPEA ACRES:</b>	<b>2009</b>	<b>2010</b>	<b>2011 (Projected)</b>
<b>MONTANA</b>	<b>2,300</b>	<b>6,300</b>	<b>18,000</b>
<b>NORTH DAKOTA</b>	<b>13,200</b>	<b>16,000</b>	<b>9,000</b>
<b>UNITED STATES</b>	<b>96,100</b>	<b>146,000</b>	<b>138,900</b>

# **PULSE CROP ECONOMICS**

## **TRENDS DRIVING PULSE MARKETS**

### **More Demand Driven than Supply Driven**

#### **From NDSU Pulse Crop Marketing Guide (2006):**

- **Population Growth – demand for protein / vegetable protein**
- **Globalization – trade + changes in land use elsewhere**
- **Weather Patterns**
- **Health Conscious Affluent Markets**

#### **Other:**

- **Increased global meat consumption driving commodity markets**
- **Currency Exchange Rates**
  - **Stronger Canadian & Australian Dollar makes US exports more competitive**
- **In the future - demand for ingredients to enhance food products or meet large niche markets: pulse flour, fractionated pulse protein, starch, fiber**

# PULSE CROP ECONOMICS

## GLOBAL PERSPECTIVE:

**India: largest producer, consumer, importer of pulse crops**

- **Production: Over 50 million acres of pulse crops**
  - about 3.7 million acres of lentils
  - 63% of pulses grown in the winter season
- **Consumption: should be 22 million metric tons (to meet dietary recommendations)**
  - Production from two harvests is about 16 million metric tons
  - Gap (recommended consumption vs. production) has doubled every decade in the last 30 years
  - In the last 10 years, the gap has averaged 5.3 million metric tons/yr
- **Imports: Normally imports about 3 million metric tons**

# **PULSE CROP ECONOMICS**

## **GLOBAL PERSPECTIVE:**

### **Major Producers:**

- **India**
- **Canada**
- **Turkey**
- **United States**
- **Australia**
- **Ukraine**
- **France**
- **China**
- **Germany**
- **Russia**
- **Pakistan**

# **PULSE CROP ECONOMICS**

## **GLOBAL PERSPECTIVE:**

### **Major Exporters:**

- **Canada**
- **Turkey**
- **Australia**
- **United States**
- **Ukraine**
- **France**

# **PULSE CROP ECONOMICS**

## **GLOBAL PERSPECTIVE:**

### **Major Importers:**

- **India**
- **Bangladesh**
- **China**
- **Pakistan**
- **Sri Lanka**
- **North Africa Countries: Egypt, Algeria, Morocco**
- **Columbia**
- **Peru**
- **Mexico**
- **Spain and other European Countries**
- **Turkey (at times)**

# **PULSE CROP ECONOMICS**

## **GLOBAL PULSE CALENDAR:**

**May – June: Turkish Harvest**

**June – Sept: Indian Monsoon Rains**

**Late July – Mid September: U.S. / Canada Harvest**

**October: Indian Kharif Crop Harvest**

- mostly beans: pigeon peas, mung beans, urd beans, and other crops - any shortfalls in these results in substitution

**November / December : Australian Crop Harvest**

**Late February - Early April: Indian Rabi Crop Harvest**

**Lent: South American / Latin America Increased in Pulse Consumption**

# **PULSE CROP ECONOMICS**

## **HOW IS 2011 SHAPING UP?**

- **2010 Indian Kharif Harvest – normal to good**
- **2010 Australian Harvest – a promising crop in the east encountered lots of moisture, the west was in drought**
- **2011 Indian Rabi Harvest – lower production despite more acres**
- **2011 Turkish Crop – likely drop in production (competition for acres, dry)**
- **Large Canadian inventory of red lentils (low inventory of green lentils)**
- **Large Canadian inventory of peas is disappearing**
- **Canada likely to reduce lentil acreage by 20% (700,000 acres)**
- **North Dakota likely to see a drop in pulse acres**
- **Montana soil moisture situation is good**
- **Pulse prices probably will stay strong**
- **Favorable multiperil crop insurance insured prices**

**2011 seems to present an opportunity for Montana farmers to replace fallow acres with pulse crops , with moderate risk to 2012 soil moisture storage**



# DISCLAIMER

The economic returns presented are estimates, **not fact.**

Make estimates that are applicable to your:

- farm,
- yield history,
- growing conditions, and
- your perception of risk.

Be cautious about planting if herbicide residual is a risk

Consider your potential harvesting capacity when deciding how many acres to plant

## To Discuss More, Contact:

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[www.agr.mt.gov/business/cropandrotationtools.asp](http://www.agr.mt.gov/business/cropandrotationtools.asp)

